State of California

The Resources Agency

Files Delta vulnerability

Memorandum

Date : January 10, 1996

To : Kathy Kelly
Executive
Room 1121-3

Curt Schmutte, Chief
Delta Levees and Contracts Section

From : Department of Water Resources

Subject : Possible Levee Inventory/Study

The September 15, 1995 levee study proposal (attached) you forwarded me has merit, but needs to be expanded to be useful in a dynamic system like the Delta. The Delta undergoes constant structural changes through levee erosion, levee settlement, land subsidence, channel morphology, etc. A more appropriate database would be one that collects levee information which is not as subject to rapid change and does not become outdated shortly after the information is collected.

A useful database should contain information related to the causes of levee distress and should facilitate levee repair projects. Through the SB34 Program, it has become apparent that the most effective way to repair Delta levees is to employ site-specific engineering solutions. Using site-specific information and new levee designs, we have been able to repair some of the worst levees in the Delta; moreover, we have made these repairs at a cost significantly lower than Corps estimates, while still achieving the same levels of flood protection.

The database we envision would utilize graphical information system (GIS) technology to provide an inventory of Delta levee site conditions. The GIS would have information such as:

- site-specific levee information
  - historical physical characteristics (aerial photography, wave fetch, slough crossings)
  - engineering analysis (stability, seepage, deformation, settlement, and modeling results)
  - laboratory testing results (soil strength, permeability, compressibility, compaction characteristics, etc.)
  - field instrumentation data (foundation and levee deformations, piezometric pressures, etc.)
  - seismic/tectonic information
- levee distress history
  - levee failures
  - levee construction
  - sinkholes
  - cracks/fractures
  - seepage/boils
  - floodfights

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- dredging information
- river reaches that historically have been dredged
- historic dredging projects
- existing stockpiles
- permitted dredge material stockpile and rehandling facilities
- stockpile capacity
- material characteristics

• levee encroachments
- existing and abandoned siphons
- gas lines
- old trees
- prior structures

Our success in the Delta has come from being proactive, innovative, and cooperative in working with the Reclamation Districts, pertinent regulatory agencies and conservation groups, and ship channel maintenance dredging projects. The GIS database we envision would be a valuable planning tool to facilitate our cooperative efforts to improve Delta flood protection while enhancing Delta habitat.

Attachment

cc: Kathlin Johnson
Mike Ford
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✓Michael Norris

9/15/95

POSSIBLE LEVEE INVENTORY/STUDY

The Long Term Management Strategy (LTMS) program in the Bay Area continues to include disposal of dredged material from the Bay Area on Delta levees as an upland disposal option. This concept could be "fleshed out" if a current inventory of Delta levees were carried out to determine:

(1) the current status of Delta levees (cross-sections, height, etc);

(2) the volume of material needed to bring Delta levees to the Corps PL-99 agricultural levee standards;

(3) the location of sites that could be used for storage of dredged material;

(4) location and estimation of volume of materials proposed to be dredged in the next 10 years within the Delta;

(5) the characteristics of that material; and

(6) the costs of dredging in the Delta, the costs of imported dredged material from out of the Delta, and the costs of importing alternative construction materials into the Delta for levee maintenance.

The information could be gathered from existing data bases of RDs, State and federal agencies, and private consultants. Technical assistance may be provided by educational institutions.

The purpose of the study is to assit in developing a long-term program for levee maintenance and to develop estimates for costs of various sources of needed material for levee maintenance.